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AUTHOR Donaghy, William C.; Donaghy, Carole D.
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ABSTRACT

Ways in which various uses or applications of a microcomputer can help improve the image of a college or university department are discussed in this paper. The paper discusses applications such as instruction, word processing, management, programing, communications, statistics, and graphics, and audiences for these applications, such as department faculty, undergraduate and graduate students, staff, administration, outside faculty members, and members of the discipline. It then develops and explains a matrix to show the importance of each application for each audience. After reporting on the results of national surveys by the Association for Communication Administration and the Speech Communication Association concerning microcomputer use, the paper concludes that (1) a speech department's image is most enhanced by communications and statistics use of the computer, (2) undergraduates and others in the discipline are also impressed by the communications application, (3) graduate students and staff like word processing, (4) faculty image is most improved by management applications, and (5) administrators see the instructional applications as being most important. The reasons behind each of these conclusions, as well as secondary image enhancement applications, are also discussed in the paper. (Author/FL)

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MICROCOMPUTERS

and

THE DEPARTMENT IMAGE

William C. Donaghy, Department of Communication
Carole D. Donaghy, College of Engineering
University of Wyoming

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MICROCOMPUTERS AND THE DEPARTMENT IMAGE

William C. Donaghy & Carole A. Donaghy
University of Wyoming

This paper discusses ways in which various uses or applications of a microcomputer, by a college or university department, can help improve the image of that department in the eyes of various relevant audiences or segments of the public. Microcomputer applications include instruction, word-processing, management, programming, communications, statistics, and graphics. Relevant audiences discussed are department faculty, undergraduate students, graduate students, staff, outside faculty, administration, and other members of the discipline. A matrix is developed and discussed to show the importance of each application for each audience. Results of national surveys by the Association for Communication Administration and the Speech Communication Association on microcomputer use are also presented and discussed. The authors conclude that a department faculty member's image is most enhanced by communications and statistics applications, undergraduates and others in the discipline are also impressed by the communications application, graduate students and staff like word-processing, outside faculty image is most improved by management applications, and administrators see the instructional applications as most important. The reasoning behind each of these conclusions as well as secondary image enhancement applications are presented in the paper.

In his classic text entitled **The Image**, Kenneth E. Boulding defines the term "image" as "what I believe to be true; my subjective knowledge." (p. 6). He goes on to propose that one's "behavior depends on the image" and that the "meaning of a message is the change which it produces in the image" (pp. 6-7). The dictionary definition of this same term is "a symbol; representation; example; ...the impression that a person, company, etc., makes or wishes to make upon the public or a segment of it." The purpose of this paper is to discuss ways in which various uses or applications of a microcomputer, by a college or university department, can help improve the image of that department in the eyes of various relevant audiences or segments of the public.

We have developed a matrix which illustrates the main points contained in this paper. The left column provides a list of the most common educational computer applications. The main groups whose images are of concern to college and university departments are listed across the top of the matrix. The thumbs-up graphic is used to suggest the importance of each application in creating a positive image for each group. We have intentionally left the departmental user vague. For different applications the user will differ. Faculty are the main users of instructional programs; whereas staff use management programs and everyone uses word processing. All these users, however, can utilize any of the applications and all contribute to the department image.

The percentages you see below each of the applications are drawn from an unpublished ACA (Association for Communication Administration) sponsored national survey of communication departments taken in Winter, 1983 (first percentage) and Leanne O. Wolff's (1984) report of the results of the SCA (Speech Communication Association) Computer Task Force survey distributed along with the April, 1984 issue of SPECTRA (second percentage). Although the percentages are fairly close, the populations were quite different. The ACA surveyed administrators of communication departments offering degrees in broadcasting, mass communication, film, rhetoric, communication, speech pathology, audiology, and theatre, while the SCA surveyed all of its members, many of whom were not in education. The ACA survey focused on microcomputers owned by a department. The SCA survey included all computers, personal, departmental, and university owned. Overall, the SCA survey found almost 79% of the respondents had some type of computer access, but only 40% of those were department owned. The ACA survey taken approximately 18 months earlier found approximately 22% department owned.

Perhaps this is an indication of the rapid growth of computers in the communication field. The SCA survey consisted of more objective questions than the open-ended type used in the ACA survey. The application definitions were somewhat different as well. These differences will be discussed later. Both surveys admittedly suffered from response and wording problems. Although application use is not the main purpose of this paper, we will discuss these percentages briefly as we go along.

Our speculations concerning the size of each thumbs-up image are drawn from a review of the literature concerning computer applications in education and direct observation on the campus of the University of Wyoming. William C. Donaghy is professor and chair of the U.W. Department of Communication. He has been involved with the introduction of computers in the department, their application, and their effect on the image of the department. His contribution to this paper comes from direct, personal, but rather limited experience. Carole D. Donaghy is completing a graduate degree in Instructional Technology and is Director of the U.W. Microcomputer Office, housed in the College of Engineering. Her experiences are much broader, having studied educational computer application theory and research and having worked with departmental users and image across the campus.

The application categories listed on the left are intentionally quite broad. We should, however, provide a little more discussion of the types of programs we include within each application. Obviously, these categories are not mutually exclusive or exhaustive. Word processing, for example, is also involved in instruction, research and management. We have tried to use categories that are most identifiable for image development purposes.

Instruction applications are usually divided into two categories: CAI or Computer Assisted Instruction and CMI or Computer Managed Instruction. CAI is any use of the computer for teaching purposes. Some of the main types of CAI are branched programming for direct instruction; drill and practice which assumes the student has already been taught the material; discovery, where a student solves problems through trial and error; simulations, which confront the learner with a scaled down approximation of a real-life situation; and gaming which, when used for instructional purposes, can make learning fun and still enhance a student's understanding of the lesson. CAI advocates claim that it allows students to proceed at their own pace (within certain boundries, of course) and frees the instructor for more direct and individual help where needed. The SCA survey found very little use of CAI materials by speech communication faculty (tutorials - 9%; simulations -

7.8%; other CAI uses - 6%; and modeling - 2.2%). The ACA survey did not break out CAI from CMI applications. In her conclusion Wolff (1984) states:

> Few respondents reported using a CAI program other than those personally programmed and none indicated any commercially available software. A wide variety of CAI types and topics have been used by the 32 respondents who have programmed instructional materials; unfortunately the programmer is apparently the only person using each piece of software. (p. 13)

CMI is any use of the computer for educational purposes other than providing direct instruction. Grading programs and test generators are probably the most common types of CMI software. Grading programs enable one to know, as soon as data is input, how each student scored on a test, how the class as a whole performed, the mean scores and curve information, an item analysis for true-false and multiple choice questions, and/or any other information the instructor may desire. These scores can be weighted, and at any time, individual and/or total readouts may be provided for the instructor or the student.

As the name implies test generators help an instructor develop an exam or quiz. This usually involves creating a bank of questions. By adding to the test bank and being able to assign objective names to the questions, tests are updated and can be made up in very little time. With large classes, various editions of the same test can be printed (with a key), so students sitting in close proximity are discouraged from cheating. In small classes students may actually take the test at the computer, which then grades it and records the score. Feedback to the student can be instantaneous or delayed. In some cases the computer can provide sources for the student to study, improving his or her understanding of the material. The CMI uses of the computer reported to the SCA were test generating (28%), quizzes (22%), data analysis (17%), testing (16%), and student research (11%). It is our opinion that the reason the percentages are higher for the ACA survey, done a year and a half earlier, is that many respondents in the ACA survey confused the developing of a test or quiz on a word processor with true test generating programs. CAI and CMI are the two applications that are most directly relevant to the traditional instructional activities and usually relate primarily to professors and teaching assistants.

Word-processing is probably the most well known and often used application of the microcomputer. The idea that one never has to retype a

whole page again is the most appealing feature of this application. Scotchtape and scissors are a thing of the past. Cut (or copy) and paste and the integration of information from other programs enables the user to become more efficient in the use of time and more effective (if used properly) in the profession. Wolff (1984) reports manuscript preparation (74%), letters (66%), resumes (46%), information retrieval (25%) and others (27%) the most common word-processing applications. In this paper we classified information retrieval as a communications application, although it need not be done "on line."

There are a large number of **management** applications in use by college and university departments. The main ones are the database and spreadsheet, but other programs are available, such as those which facilitate the management of desktop information (i.e, appointments, phone directories and mailing labels). Database programs help one store, find, and keep track of files, information and illustrations. Many database programs also include the ability to give a totals where applicable or multiply by a constant. Although management applications, as we have defined them, are used primarily by department administrators and staff, the instructor who wants bibliographical information available for a research class could also use a database to call up the wanted information according to one or more categories rather than wade through a list of all entries.

Electronic spreadsheets have many management functions. In general, they are used when calculations are necessary. Good spreadsheet programs include if-then statements, standard deviation, averaging, true/false logic, and much more. They also come in handy when, even if you don't need those functions, you want to use a grid. The program can be printed with or without gridlines, row and column numbers, or any combination of these features. The SCA survey used the term "record keeping" to refer to what the ACA survey called "management," "instruction," or "word-processing." The most common uses were syllabi (34%), grades (31%), mailing lists (31%), budgets (22%), time schedules (16%), advising information (18%), student critiques (8%), and attendance (7%). The reason the ACA percentage is so high may be due to the respondents being primarily department heads and chairs who claimed administrative or management applications as a "knee-jerk" reaction.

Programming refers to the development of new programs using the various computer languages such as BASIC, Fortran, Tutor, Pilot and Pascal. Programming can relate to any of the other applications, but educational programmers are primarily interested in developing instructional aides (both

CAI and CMI). The 20% SCA survey figure represents any user who has ever written a program, many of which were for record keeping, grade reporting or utility programs such as printer controls. Only 49 respondents (9.8%) reported any inclination to develop their own instructional materials, and 32 people had actually created instructional programs.

Communications, via a telephone modem or "hard wire," enables users to search for and share information with others. In some universities there are extension classes taught using this application. Other growing uses are for rapid interaction with students, colleagues, book publishers, etc; teleconferencing; polling; interfacing with mainframe computers; and information retrieval. Retrieval sources are available for obtaining bibliographies, abstracts, etc. in a fraction of the time it normally takes. Neither survey gathered much information on communications applications. The prospects for this application in the future are tremendous. We strongly suggest you obtain a copy of the paper by H. Wayland Cummings (1984), which also grew out of the SCA task force created by Frank Dance and was presented at the Chicago SCA meeting, which covers this application in greater detail.

Statistical applications are primarily used in research. Many statistics programs for the microcomputer are now almost as sophisticated as those found on mainframes. Some statistical programs also contain provision for graphic representation of the data, projecting trends, and/or creating results tables. The percentages listed on the matrix represent respondents who reported using a computer for some form of research. We suspect this includes both statistical and graphic research applications.

Graphic applications include all forms of visual presentations such as bar charts, line graphs, maps, technical illustrations, tables, trend predictions, project flow diagrams, technical fonts, and pictorial representations. Graphics are used in research, professional presentations, books and monographs. This application gives professional writers a flexibility and time saving which they have not previously enjoyed.

There are a number of other potential educational applications of the computer, such as animated sequences, music compositions, personality evaluation, outlining, and specific applications for particular users such as doctors, architects, engineers, and designers. The ACA survey responses included such uses as speech synthesis for phonetic training, box office reservations, library cataloging, theater lighting, and radio/tv logs. These also probably have an image creating effect, but we have had little direct

contact with them and are, therefore, leaving them out of this presentation. We will instead move on to our main propositions regarding the image enhancement potential of each application for each audience. The larger the size of the thumbs-up graphic, the more we feel the group's image is enhanced with the use of that application. Where we feel the application has little or no image enhancement value, we have left the matrix square blank. We will discuss the image improvement capability for each audience one at a time, beginning with those people closest to the department (the faculty, students, and staff) and ending with those persons more distant from the department (other campus faculty, college and university administration, and colleagues in the discipline).

How does one's image of his or her own department become enhanced? That is an interesting question in and of itself, but for the time being let's say it involves helping **department faculty** do the jobs for which they were hired. Most faculty are hired to do teaching, research and service. The applications we have indicated on the chart are the ones which help most in fulfilling those functions. We all know, however, that there are very few institutions which reward all three functions equally. At the University of Wyoming, and a rapidly growing number of other universities, the emphasis has shifted to research. The two most important computer applications for the researcher are communications, for information retrieval, and statistics. Graphics and wordprocessing are excellent research presentation tools regardless of whether the medium be a convention paper, journal article or book. Most faculty have some interest in departmental and/or personal use of the computer for management purposes, but this application has much less effect on them and, therefore, less image enhancement value.

One might expect instruction applications to be rated much higher than we have shown on the matrix. This rating was chosen because the instruction category is often viewed as a mixed blessing by faculty. The hangup is not so much in the CMI application, where many faculty are already using departmentally supplied gradebook and test generating programs, but in the area of CAI. The four main problems here are courseware, compatability, memory, and fear. There is still very little instructional material (or courseware) available for faculty who want to use CAI at the college level. Many reviewers have suggested that 80% of what is available is "junk," and few independent review sources are available to help locate the useful programs. When one does find a potential CAI program it is very often written for another brand of computer or more memory capacity than that which is available to the faculty member. Finally, the use of computers for

direct instructional purposes still carries the threat in the minds of many faculty that they will be replaced by the computer. A panel at the EDUCOM conference in Boston in November, 1984 reported that professors are afraid of losing their authority as students find the computer to be an alternative method of learning. We sincerely hope that this rating for instruction will change as more faculty become exposed to the benefits of CAI and CMI, but that process will take time. What is encouraging is that over half of the SCA respondents showed an interest in purchasing software for instruction. The types of instructional materials desired can be found in Wolff's (1984) paper. Also, we agree completely with her conclusion that:

> If the discipline is to move the Age of Compunication into the speech communication classroom, the challenges are evident. Persons who are developing CAI materials need to be encouraged. Evaluation and distribution of software must be promoted and facilitated.

While we are on the topic of instructional uses of the computer , lets look at the person who is most directly affected--the **undergraduate**. They also perceive CAI as a mixed blessing. Most undergraduates still tend to shy away from courses that they hear are taught, even partially, using the computer, while those who have had good experiences with CAI and realize the advantages of such individualized instruction extoll its virtues. It has been our experience, however, that CMI is something most undergraduates *do* appreciate. Gradebook programs, for example, can be used to keep students aware of their standing in a class on a regular basis with little effort on the part of the instructor. We have given the highest rating for undergraduate image enhancement to the management application. Good department management, made more efficient by the use of microcomputers, often means that appointments are kept (on time), that there is less waiting for information from professors and/or staff members, and so on. Outside of the classroom, the department office is where much of the undergraduate's (especially a major's) image is formed.

The choice of communications is based on the assumption that the undergraduate is in an extension program and/or one of the influx of adult learners returning to the university setting. For those students the communications application could be a real department image maker. The usual run-of-the-mill undergraduate would have no need for this application, unless an instructor uses it for something like class teleconferencing with a person possessing certain expertise.

Many **graduate students** in communication are both teachers and students. Therefore, the remarks made above would also apply to the potential of computers to enhance their department image as well. We have found, however, that like professors who see their research as the top priority, graduate student images are formed primarily on the basis of what the department does to help them with their theses or dissertations. From this perspective, top marks would go to wordprocessing, statistics, and communications. The reasons are almost exactly the same as those presented for the department faculty member. One of things that many departments at the University of Wyoming have done is to, as much as possible, provide computer training, software, and hardware for both graduate students and faculty, and encourage their use. This has been especially important to the graduate students who work on an extremely tight budget. The enthusiasm and image enhancement this has brought to the U. W. Department of Communication is astounding. However, the SCA survey found student use of departmental computers nationally to be rather limited, with only 24.6% allowing graduate students and 13.8% allowing undergraduates access.

Staff feelings about a department are important. The grapevine in a university is rampant among staff. It is probably not surprising to most of you how departments and professors are talked about and known by staff members throughout the campus. For the moment we will base this evaluation on clerical staff (usually the main secretary, assistant secretaries and parttime clerical help, and/or work studies, depending on the department). What impresses a staff member? Staff images are again based upon what makes it easier for these people to function with the most efficiency. The availability of wordprocessing to a staff member is the most impressive application. Management runs a close second and if professors use a microcomputer in instructional application, the work load is lightened even more. All good reasons why a staff member would perceive the department in a good light and want to work for it.

As the groups whose image of a department are of concern, are further removed from unit's internal day-to-day workings, the applications that are most important change considerably. In the case of **faculty in other departments**, management applications are one of the more important image-makers. Much of the time, the only communication between departments and faculty revolves around management. A department is recognized as being efficient or inefficient. We have already discussed the general improvement in efficiency possible with the correct use of

microcomputer management programs. Instruction is our second choice here even though outside faculty have most of the same fears and problems as department faculty. Somehow, however, the use of CAI always looks better when someone else is doing it. If a department is known to have implemented CAI, and the results are positive, its image will be positive. When it is known by the outside faculty member how much easier it is to use CMI rather than the time consuming pencil/gradebook method or how much easier it is to give and grade exams, information that another department uses these tools will also create a better image. Last, we rated communications as a plus factor. The idea of "being on line" currently has a kind of magic appeal. Regardless of whether it is used in outreach teaching, for information retrieval, or to send mail, the fact that it is used at all, and is available, will enhance the image. If you've got your own electronic number, you are SOMEBODY in this information age.

Administration perceptions are usually based upon efficiency and production. Administrators who perceive a department utilizing relevant courseware or increasing efficiency in dealing with grades, tests, and record keeping, with little or no protest from students, are impressed. Management rates second for the same basic reasons. Again, efficiency is the key. Much of the management output of a department is channelled directly to the administration. Up-to-date, on time information is one of the few things that makes administrators smile. Also important to administrators are communications, statistical, and graphic applications, since they apply directly to data collection/analysis and research presentation. If a department increases its production in the research area and brings greater recognition to the college or university, and the increase can be attributed to the use of a microcomputer, then the administrator's image of the department will be enhanced. Communications applications, outside of research, could bring the rating up even higher. If extension networking is implemented, where one or more students can communicate with a professor, administrators would consider this to be a big plus for the department. Outreach is becoming a major goal for administration as well as boards of trustees, legislators and governors.

People in the **discipline**, outside of the university, seem to rate the communications application as the most impressive use of the computer in a department. The establishment of commissions, conference programs, and interest groups devoted to this subject attest to that fact. The ability to retrieve information for use in research or share information, without waiting three months, has a great deal of appeal. The possibilities are

endless, if two faculty at different institutions are coauthoring a book, article or paper presentation, and they each have modem capabilities, they can exchange everything from first draft to final editing during an evening. Teleconferences on special subjects could be conducted more often with much less expense. The reviewing time for our journals could be reduced greatly. These are just a few of the many possibilities all of us see in the future.

Programming is also highly regarded by colleagues in the discipline. As discussed earlier, we are all aware of the need for more relevant CAI and CMI programs developed and tested by persons with the necessary content expertise. Since only a few faculty currently have the ability and/or time to develop instructional programs, those who do and the departments they represent benefit in much the same way they do when a textbook or important publication comes out of that department. After all, that is one of the main ways we have formed images of departments around the country in the past.

Instructional applications face the same problems and issues in creating a department image in the discipline as they do for the other publics already discussed. If a department is into using computers for CAI applications, the discipline generally perceives it as an experiment and benefits from and appreciates the results. On the other hand, the fears still persist. All of us realize that administrators also talk among themselves. A problem can arise if,when one department manages to use computers successfully for instructional purposes, some administrator will expect it to be used just as successfully in their institution regardless of the differences in the faculty, curriculum, and general educational environment.

In summary, we have tried to present a paper which would make you think a little more about the microcomputer and departmental image. We certainly do not claim to have all of the answers, and as we said in the beginning a lot of what we presented here is pure speculation. We hope you will argue with us and present your ideas on this subject. About one thing there is no doubt... as more microcomputers and applications appear in our departments, they will create images--for better or for worse.

Microcomputers and the Department Image

	Dept. Faculty	Undergrad.	Graduate St.	Staff	Out' Faculty	Admin.	Discipline
Instruction (63%/47%)							
WORD-PROCESSING (65%/82%)							
Management (79%/55%)							
Programming (4%/20%)							
Communications							
Statistics (Research) (56%/44%)							
Graphics (2%)							

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